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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,075	07/16/2008	**Hindrik Willem De Vries**	2602-0011	8763

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EXAMINER	
ALEMU, EPHREM	
ART UNIT	**PAPER NUMBER**
2821	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/584,075	DE VRIES ET AL.	
	Examiner	Art Unit	
	Ephrem Alemu	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/22/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

2. Claim 8 is objected to because of the following informalities: in claim 8, line 2, the unit of measure for "secondary electron emission between 0.01 and 1" has not been provided. Appropriate correction is required.

Double Patenting

3. Claims 1-5, 10-14 and 21 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 7-9, 10-13, 17 and 24 of copending Application No. 10/584,145 in view of Roth (US 5,938,854, submitted by applicants').

With respect to claim 1, the instant application claims a method of removing contaminants from a surface of a substrate by subjecting said substrate surface to an atmospheric pressure glow plasma generated in a discharge space (corresponds with "a method for controlling a glow discharge plasma in a gas or gas mixture under atmospheric conditions in a plasma discharge space as claimed in claim 1 of the copending application '145), comprising one or more electrodes, wherein said plasma is generated by applying an alternating plasma energizing voltage to said electrodes causing a plasma current and a displacement current, and wherein said plasma is stabilised by controlling said displacement current during plasma generation

(corresponds with "comprising at least two spaced electrodes, wherein at least one plasma pulse is generated by applying an AC plasma energizing voltage to said electrodes causing a plasma current and a displacement current, said at least one plasma pulse comprising an absolute pulse maximum, said method comprises the step of controlling said energizing voltage such that a relative decrease of said displacement current is provided before said pulse maximum" as claimed in claim 1 the copending application '145).

The copending application '145 does not specifically mention the method for controlling a glow discharge plasma in a gas or gas mixture under atmospheric conditions in a plasma discharge space is for removing contaminants from a surface of a substrate such that modification of properties of said substrate surface is prevented.

Roth discloses a well known apparatus including a pair of electrodes for removing contaminants from a surface of a workpiece to provide a cleaned workpiece (Fig. 1; Col. 5, lines 5-24).

Therefore, given the method for controlling a glow discharge plasma in a gas or gas mixture under atmospheric conditions in a plasma discharge space as claimed in claim 1 of the copending application '145, removing contaminants from a surface of a substrate such that modification of properties of the substrate surface for being prevented deemed to be obvious by controlling the displacement current using a well known apparatus including at least two electrodes as is evidenced by Roth.

As to the further limiting claims as claimed in claims 2-5, 10-14 and 21 of the instant application, given, the method claims as claimed in claims 2-5 and 7-9 as claimed the copending application '145 in view of Roth, the further limiting claims as claimed in 2-5, 10-14 and 21 of

the instant application would have been deemed to be obvious for no other reason than controlling the energizing voltage such that a relative decrease of the displacement current is provided before the pulse maximum.

This is a provisional obviousness-type double patenting rejection.

4. Claims 22-25 and 28 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 10-13, 17, 19-23 and 24 of copending Application No. 10/584,145. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

With respect to claim 22, the instant application claims an apparatus for removing contaminants from a surface of a substrate by subjecting said substrate surface to an atmospheric pressure glow plasma, comprising a discharge space, wherein said discharge space comprises one or more electrodes as claimed in claim 1 (corresponds with "device for treating a surface of a substrate, comprising an apparatus for controlling a glow discharge plasma in a discharge space having at least two spaced electrodes" as claimed in claim 24 of the copending application '145), means for generating said atmospheric pressure glow plasma in said discharge space using said electrodes, wherein means for generating said plasma comprise means for applying an AC plasma energizing voltage to said electrodes for causing a plasma current and a displacement current (corresponds with "means for introducing in said discharge space a gas or gas mixture under atmospheric conditions, a power supply for energizing said electrodes by applying an AC plasma energizing voltage to said electrodes for generating at least one plasma pulse and causing a plasma current and a displacement current, said at least one plasma pulse comprising an absolute pulse maximum" as claimed in claim 24 of the copending application '145), wherein

said apparatus further comprises means for controlling said displacement current during plasma generation for stabilising said plasma (corresponds with "means for controlling said plasma, said means for controlling said plasma are arranged for controlling said energizing voltage such that a relative decrease of said displacement current is provided before said pulse maximum" as claimed in claim 24 of the copending application '145). As to the further limitation of claim 22 "such that modification of properties of said substrate surface is prevented" deemed to be obvious in view of the copending application '145 since the displacement current is controlled during the plasma generation in a manner claimed in claim 24 of the copending application '145. As to the further limiting claims as claimed in claims 23-25 and 28 of the instant application, given, the device or apparatus claims as claimed in claims 10-13, 17, 19-23 and 24 of the copending application '145, the further limiting claims as claimed in claims 23-25 and 28 of the instant application would have been deemed to be obvious for no other reason than controlling the energizing voltage such that a relative decrease of the displacement current is provided before the pulse maximum.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. Claims 1, 6-9, 15-20, 22-24, 26, 27 and 29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 14 of U.S. Patent No. 7,399,944. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

With respect to claim 1, the instant application claims a method of removing contaminants from a surface of a substrate by subjecting said substrate surface to an atmospheric

pressure glow plasma generated in a discharge space (corresponds with a method for controlling a glow discharge plasma in a gas or gas mixture under atmospheric conditions for performing surface cleaning in a manner claimed in claims 1 and 14 of the issued '944 patent), comprising at least two spaced electrodes comprising one or more electrodes, wherein said plasma is generated by applying an alternating plasma energizing voltage to said electrodes causing a plasma current and a displacement current, and wherein said plasma is stabilised by controlling said displacement current during plasma generation (corresponds with "generating at least one plasma pulse by applying an AC plasma energizing voltage to the at least two spaced electrodes thereby causing a plasma current and a displacement current, said at least one plasma pulse including an absolute pulse maximum, and controlling the AC plasma energizing voltage such that a relative decrease of the displacement current is provided after the pulse maximum" as claimed in claim 1 of the issued '944 patent). With regard to the limitation "such that modification of properties of said substrate surface is prevented" deemed to be obvious in view of '944 issued patent since the displacement current is controlled during the plasma generation in a manner claimed in claim 1. As to the further limiting claims as claimed in claims 6, 7,8, 9, 15, 16, 17, 18, 19 and 20 of the instant application, given, the method claims as claimed in claims 2, 5, 6, 7, 15, 16 and 37 of the issued '944 patent, the further limiting claims as claimed in claims 6, 7,8, 9, 15, 16, 17, 18, 19 and 20 of the instant application would have been deemed to be obvious for no other reason than controlling the energizing voltage such that a relative decrease of the displacement current is provided after the pulse maximum.

With respect to claim 22, the instant application claims an apparatus for removing contaminants from a surface of a substrate by subjecting said substrate surface to an atmospheric

pressure glow plasma, comprising a discharge space, wherein said discharge space comprises one or more electrodes as claimed in claim 1 (corresponds with "system for controlling a glow discharge plasma in a discharge space having at least two spaced apart electrodes" as claimed in claim 22 of the issued '944 patent), means for generating said atmospheric pressure glow plasma in said discharge space using said electrodes, wherein means for generating said plasma comprise means for applying an AC plasma energizing voltage to said electrodes for causing a plasma current and a displacement current (corresponds with "gas inlet assembly introducing in said discharge space a gas or gaseous mixture under atmospheric conditions, a power supply for energizing said electrodes by applying an AC plasma energizing voltage to said electrodes for generating at least one plasma pulse and causing a plasma current and a displacement current, said at least one plasma pulse comprising an absolute pulse maximum" as claimed in claim 22 of the issued '944 patent), wherein said apparatus further comprises means for controlling said displacement current during plasma generation for stabilising said plasma (corresponds with "means for controlling said plasma, wherein said means for controlling said plasma are arranged for controlling said an AC plasma energizing voltage such that a relative decrease of said displacement current is provided after said absolute pulse maximum" as claimed in claim 22 of the issued '944 patent). As to the further limitation of claim 1 "such that modification of properties of said substrate surface is prevented" deemed to be obvious in view of '944 issued patent since the displacement current is controlled during the plasma generation in a manner claimed in claim 22 of the issued '944 patent. As to the further limiting claims as claimed in claims 23, 24, 26, 27 and 29 of the instant application, given, the system claims as claimed in claims 22, 24, 25, 28, 29 and 32-34 of the issued '944 patent, the further limiting claims as

claimed in claims 23, 24, 26, 27 and 29 of the instant application would have been deemed to be obvious for no other reason than controlling the energizing voltage such that a relative decrease of the displacement current is provided after the pulse maximum.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gherardi et al. (US 6,299,948); Kunhardt et al. (US 6,147,452); and Porter et al. (US 6,046,546); teach similar inventive subject matter.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ephrem Alemu whose telephone number is (571) 272-1818. The examiner can normally be reached on M-F 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W Owens can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EA
05-22-10

/Douglas W Owens/
Supervisory Patent Examiner, Art Unit 2821
May 23, 2010